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NRCS Natural Resources Conservation Service

Year 2006 Progress Report of Activities Los Lunas Plant Materials Center

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This report highlights a few of the major activities at the Los Lunas Plant Materials Center (LLPMC) during 2006. For detailed information, contact us at the LLPMC.

Who We Are

The Los Lunas Plant Materials Center is one of 28 Plant Materials Centers operated by the USDA Natural Resources Conservation Service (NRCS). Areas served by the LLPMC include New Mexico, Northeast Arizona, Southeast Colorado, West Texas, and Southeast Utah. The LLPMC is located twenty-five miles south of Albuquerque in Los Lunas, New Mexico. It is operated in conjunction with New Mexico State University's Agricultural Science Center. The facility is located in the Middle Rio Grande Valley and includes 200+ acres of irrigated land.

Los Lunas Plant Materials Center at Los Lunas, NM

What We Do

It is our mission to develop, test and transfer effective, state-of-the-art plant science technology to meet customer and resource needs. The LLPMC targets these major land resource areas (ecozones):

- New Mexico and Arizona mountains
- San Juan River Valley plateaus and mesas
- Southern desert basin, plains and mountains
- Southern Rocky Mountains
- High intermountain valleys
- Pecos–Canadian plains and valleys
- Southern high plains

The LLPMC emphasizes using native plant materials to solve conservation problems. Environmental conditions including low precipita6tion, high intensity rainfall, wind, topography, and varied land uses combine to produce a variety of problems needing plant material solutions.

The LLPMC collects superior adapted plants for testing, selecting, and distributing to commercial growers along with seed and plant production technology. Additionally, plant establishment technologies are developed or refined that require minimal or no irrigation in the arid southwest.

The following highlights are featured in this report:

The articles on the following pages provide a brief summary of Year 2006 accomplishments. For more detailed technical information, request the *2006 Annual Technical Report.*

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Spreading the Word

The Los Lunas Plant Materials Center (LLPMC) is on a mission to spread the word about riparian planting techniques that work, and seeking the help of the New Mexico soil and water conservation districts to do so. Their recent demonstration field day hosted by the Pritzlaff Ranch, near Las Vegas, New Mexico illustrates their efforts to spread the technology they have developed over the past two decades.

The Pritzlaff Ranch demonstrated a lesson learned from thousands of transplants they installed in 2001 with each

plant housed in a three-foot plastic shelter tube. While the tubes were to provide protection from the wind, reduce transpiration demands by shading, and provide supplemental water from condensation; they were no match to the drought prone Southwest, and less than five percent of the plants survived.

This unfortunate experience illustrated how water is generally the limiting factor affecting plant establishment in New Mexico.

Planting willows to a 30-inch depth using electric rotary hamper drills

At the core of the technologies the Plant Materials Center has developed is connection of a plant's roots or main stem with ground water released from bank seepage by a river. The Pritzlaff Ranch field day offered hands on training on drilling monitoring wells with portable well drilling equipment, planting willows with electric rotary hammer drills, placing longstem transplants at the proper depth in augured holes, and planting cottonwood pole cuttings on the Sapello River. By using these techniques and connecting the plants' roots or main stem with the groundwater, only limited or no follow up irrigation will be needed to establish these plants. A special note needs to be made that hand tools are ineffective.

The Pritzlaff Ranch field day was attended by local producers and staff from the Las Vegas and Mora USDA Service Centers, Army Corps of Engineer Albuquerque District office, and Biophilia Foundation. Brochures on all the planting techniques demonstrated were provided so note taking was not required.

The Plant Materials Center is well recognized for its expertise in riparian restoration techniques, and is now soliciting interest in future workshops in your area. Greg Fenchel, Plant Materials Center manager, can be contacted at 865-4684.

Stacked Propagation for Root Cutting Production of Hopi Plant Materials

Propagation from root cuttings can be preferable in instances where seed is not available, where clonal materials are preferred, or when other propagation techniques are not effective. Los Lunas Plant Materials Center (LLPMC) encountered such a case when only a few aspen seedlings of an ecotype for the Hopi Tribal Lands were available for propagation. The “stacked propagation” technique should rapidly and efficiently increase root cutting production for amenable species. This method is a modification of a concept for rapid root cutting production developed in Alberta, Canada for aspen clone production; their methodology uses a one gallon stock plant (ortet) placed on a one inch layer of potting mix covering the top surface of a styroblock (personal communication, Larry Lafleur 2003). The goal was to encourage root proliferation into as many cells (i.e., cavities) as possible and to develop adventitious shoots after a dormancy treatment. Their method has allowed the production of 1000 or more ramets from an individual ortet in a single season.

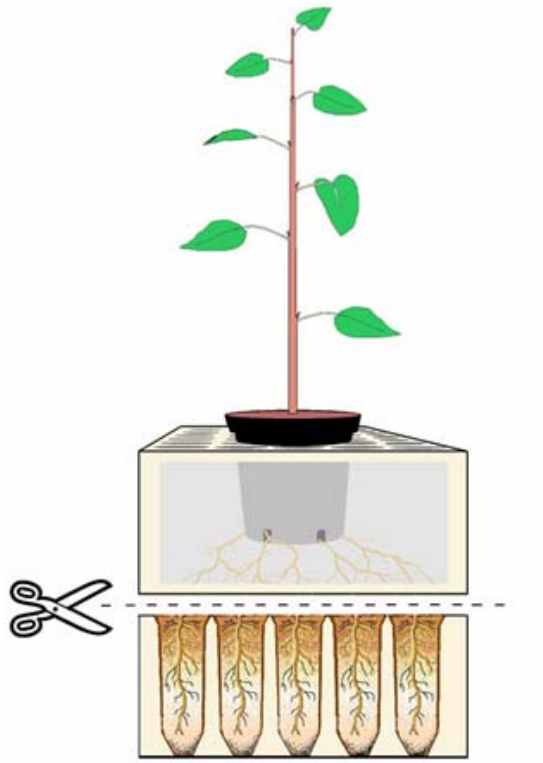
Our original modification (Version 1) used an inverted Styroblock™ with a hole to accommodate the one-gallon stock plant. This cover block served to insulate the pot, provide dark, moist conditions for rooting into the potting mix layer, and allowed surface watering to distribute water through the vent and cell cavities in the cover block and thoroughly moisten the potting mix layer and the rooting block cells below. The main flaw with the Version 1 assembly was the excessive loss of the potting mix layer by erosion from the perimeter of the potting mix layer and through the vent holes in the rooting block. The loss of mix between the blocks did not allow roots to proliferate over the entire rooting block. The best rooting percentage obtained was about 50% with Styroblock 10’s (77 cavities, each 170 ml).

To address this design flaw, Version 2 incorporated a spun bonded fabric barrier to join the cover block to rooting block and to join adjacent rooting blocks. The use of polyurethane cement or staples to adhere the spun bonded fabric to the blocks was labor intensive and not very efficient. This system was tested with 3 rooting blocks per stack to determine if root penetration from the upper to lower rooting blocks could be achieved. Approximately one year (July 2005 to July 2006) after construction of two stacked block assemblies, about 85 % of the cavities had aspen roots emerging from the bottom rooting block. The third modification, Version 3, involved the use of ½” wide filament tape to cover the vent holes in the rooting block and prevent potting mix from washing out.

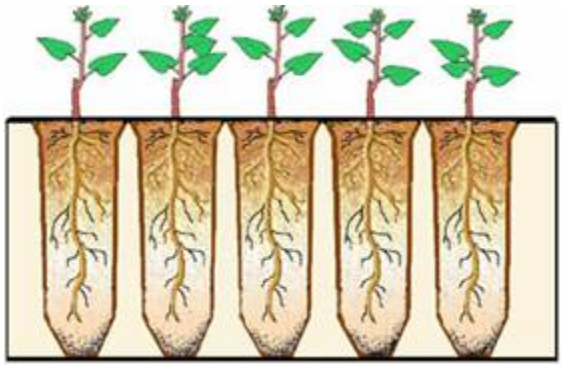
Our original tests were all performed with aspen stock plants. However, it was suggested to try the technique with shrub oak species, because acorn production is rare on the Hopi Tribal Lands. Two stacked block assemblies were designed to test the root proliferation and potential for adventitious shoot production of two thicket-forming oak species, Quercus gambelii and Quercus x pauciloba. The only stock plants available for the test were growing in Tall One treepots, so the cover for each single rooting block consisted of two stacked Styroblock Gallons (eight cavities, each 3000 ml) to accommodate the tall and skinny stock plant containers.

A one-gallon plant is placed into a "cover" Styroblock™ which is stacked above "propagation" blocks filled with growing media.

The latest modification is to use Styrofoam™ strips to seal the gaps between the Styroblocks™.



The concept behind stacked propagation is that roots from the mother plant will grow down through the cells of the lower propagation blocks, which will then be severed.



Sprouts will develop from the cut roots and grow into shippable plants.

The most recent modification, Version 4, utilizes strips of expanded polystyrene approximately ¾" x 1" cut to appropriate lengths to construct a perimeter barrier to retain the potting mix. The strips were pinned to the rooting block with rigid wire pins to allow removal when the ortet is severed from the rooting block. The small gaps above and below the perimeter strips allows some drainage and aeration while still retaining the potting mix.

The cover block with the ortet plant is held in place with twine loops around the cover and rooting blocks. The filament tape was again used to cover the vent holes. After 3½ months (mid-April through July), seven aspen assemblies were assessed for root emergence. The percentage of cavities with emerging roots ranged from 55 to 85% with a mean of 75%. With a full growing season, higher root emergence percentages might be achieved. The increase potential of Version 4 will not be known until one full growing season has been completed, the stock plants severed, and the root cuttings form adventitious shoots in 2007 after a dormant period.

The production of root cuttings using the stacked propagation system might make root cutting propagation less onerous than traditional methodologies. A more detailed description of stacked propagation can be found in *Native Plants Journal* 7(3):286-292.

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Riparian Plant Materials for Watershed and Ecosystem Restoration Projects on the Cibola National Forest

Establishing a source of plant materials for the Cibola National Forest was one of the nursery projects at the LLPMC in 2006. These plant materials consist of native riparian trees and shrubs as well as wetland plants that are ecotypes indigenous to areas undergoing watershed and ecosystem restoration within the Cibola National Forest including the Canadian River Salt Cedar Eradication Project and the Tajique Watershed Restoration Project.

Seed was collected by US Forest Service personnel from the Canadian River watershed (Perico Creek, Seneca Creek, and Mills Canyon) and shipped to the LLPMC in late June of 2005. In the summer of 2006, Super Cell and Deepot 16 seedlings were transplanted into one-gallon treepots (4" x 4" x 14"). A total of 450 chokecherry, 400 cottonwood, 160 peachleaf willow, 200 coyote willow, and 160 waxflower seedlings were transplanted. Most of these species will be ready for outplanting based on root ball integrity by the spring of 2008. Production of long-stem stock (4 – 7 feet) for deep planting into the capillary fringe above the water table might require one additional growing season.

In mid-July 2006, Super Cell seedlings of cottonwood, peachleaf willow, and coyote willow were transplanted into flood irrigated production blocks for eventual production of dormant pole cuttings. A total of 14 rows were planted. Each row was 300 feet long with approximately 150 plants per row. The pole production blocks were prepared by discing, laser-leveling, ripping with a single shank ripper to breakup any hardpan in the planting row, installing 3-foot wide ground cover fabric to serve as a weed barrier, irrigating one day before planting, auguring planting holes at least 12" deep, applying 5 g of 17-6-12 controlled release fertilizer in each hole, inserting the seedling, backfilling with sufficient soil to fill all voids, and irrigating a second time. These plants should approach 5- to 7-feet in height by late summer 2007, and small poles (~12 to 14 feet) of cottonwood and peachleaf willow should be available by the winter of 2008-2009. Coyote willow dormant whip cuttings (~6 to 9 feet) could be available by winter 2007-2008.

Pole production block of Mills Canyon cottonwood planted in July of 2006.

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Development of Legume Dalea for the Gila National Forest to be Utilized in Post-Fire Seed Mixtures in Southwestern Pinyon/Juniper Communities

Testing *Dalea* species that establish naturally after burns to determine which species have potential for commercial seed production and are valuable as burn rehab species in the pinyon/juniper vegetation type in the Southwest is being undertaken by the LLPMC. The palatability and forage value of the species will be assessed to determine potential wildlife use. The goal is to develop legume releases that will be requested by land managers and can be produced economically by commercial growers.

Scarification treatments were tested to determine methods to provide complete and rapid germination of seed in greenhouse or seed production field plantings. The treatments included hot water or percussion to disrupt the hard seed coat of this legume species. Hot water at 80º to 85º C resulted in rapid and almost complete germination. The maximum germination was only about 60% and probably resulted from weevil damage to approximately 40% of the wild-collected seed. The 25º C water treatments allowed only about 10 to 15% of the viable seed to germinate rapidly. The boiling water treatment killed the seed while the 90º C water reduced germination somewhat relative to the best hot water treatments. The percussion treatments eventually yielded almost complete germination after two months; germination was delayed appreciably with only about 50% of the viable seed germinating after 2 to 3 weeks.

Plug seedlings of *Dalea leporina* were grown in the greenhouse and then hardened off in the nursery until the field planting date, June 14, 2006. Two rows in a sandy loam soil, each row approximately 350 feet long, had a 36" wide kraft paper (40 lb type) mulch applied as a weed barrier. The paper was perforated with a sharpened soil corer to create a one inch hole and then a dibble the size of root plug was inserted into the soil. The plug seedlings were about 3 to 4 inches tall and very slender with minimal leaf area; many plugs contained more than one seedling. After all the plugs were planted, the field was flood irrigated twice a week for 3 weeks and weekly thereafter, except during periods of high rainfall.

On August 23, 2006, a final stand count was conducted. The west row had 65 plant units and the east row had 116 plant units; in many instances more than one plant was in a unit. Approximately 300 plugs were planted per row. The poor survival may be partially a result of moisture stress soon after planting the plug seedlings. More plants survived (88 plant units) closer to the irrigation riser than at the far end (48 plant units). These 181 plant units yielded 31 pounds of cleaned seed (78 g /plant unit)

The paper mulch was somewhat effective in restricting weed growth. The mulch lost some integrity after the first few waterings. The degradation rate seemed to slow down after the first few weeks; the mulch was still fairly well intact as of late August. The following figure shows plant density and size in late August for *Dalea leporina* in the moister end of the field.

Dalea *leporina* rows in the field, 70 days after planting plug seedlings.

Three plants were dug up at random from the rows and measured; dry matter production ranged from 70 to 100 g/plant, height from 68 to 74 cm, and width from 59 to 71 cm. All the root samples had substantial numbers of small nitrogen-fixing nodules on the fine (tertiary) roots. The shoot samples were submitted for forage analysis which yielded relative feed values from 145 to 196, total digestible nutrients from 62 to 79%, and crude protein from 21 to 26 %.

Assistance–Conservation Concerns

The Los Lunas Plant Materials Center (LLPMC) has been working directly with NRCS Field Offices, Resource Conservation and Development Offices, and Soil and Water Conservation Districts to provide assistance with many conservation concerns including wind erosion. Solutions to wind erosion have included field windstrips, variety trials, and revegetation techniques. Providing assistance allows the LLPMC opportunities to test new plant materials and demonstrate new planting techniques.

The LLPMC continues to provide giant sacaton transplants for trial plantings throughout the LLPMC service area. These trial plantings help to evaluate the effectiveness of giant sacaton as field and farmstead wind strip that aids in the prevention of wind erosion and determine the range of adaptation. The first of the trial wind strip plantings was established in 1999 in Columbus, New Mexico.

Since 1999, thirteen locations including the Columbus site have seen giant sacaton windstrip trials established. In 2006, five new windstrip trials, Jal, Milan, Deming, Espanola, New Mexico and The Gap, Arizona were established using giant sacaton transplants grown by the Los Lunas Plant Materials Center. Two of these windstrip plantings will be the first to be grown under natural precipitation using no supplemental irrigation.

Eddie Diaz - Highway 180 Deming, New Mexico

This windstrip is located on Mr. Diaz's property northwest of Deming, New Mexico adjacent to Highway 180. The planting site is on an abandoned livestock holding area that has seen very little regeneration of native vegetation after the livestock were removed. The area during high wind events is the source of considerable dust caused by wind erosion and is causing a hazard for traffic on Highway 180.

Installing a windstrip on Eddie Diaz property

With assistance from the Deming Field Office, the Deming Soil and Water Conservation District, and the Los Lunas Plant Materials Center, Mr. Diaz is trying to use giant sacaton wind barriers to reduce the wind erosion

on his property. The LLPMC was able-to provide Mr. Diaz with 750 giant sacaton transplants this summer. This planting of giant sacaton is providing the LLPMC with useful data on the potential to establish this species using only natural rainfall. Previously all windstrip plantings have been receiving supplemental moisture in order to ensure good survival and growth. To help in providing moisture for the planting the landowner was able to make small furrows in the soil, perpendicular to the natural slope to catch any overland flow of water during rain events. This additional moisture may help the sacaton become established in an area that is typically hot and dry.

Jesse Willie Farm - The Gap, Arizona

In July of 2006, Felix Nez of the Dilkon, Arizona NRCS Field Office contacted the LLPMC for possible assistance using giant sacaton to protect cropland on the Jesse Willie farm near The Gap, Arizona. Mr. Willie's farm is located just north of The Gap on Highway 89. Mr. Willie farms dryland vegetable crops and because of the light-textured soil in the area, he has a severe problem with erosion on his land. Wind erosion during high-wind events damages his crops and is eroding his soil at a high rate. The giant sacaton windstrip is being installed to evaluate its potential in this area of Arizona for reducing wind erosion and possibly water erosion on the farms found there.

The Gap, Arizona

Working with the Little Colorado River Soil and Water Conservation District, the LLPMC was able to provide 230 giant sacaton plants to be established on Mr. Willies farm. On August 22, 2006 the giant sacaton were delivered and installed by Mr. Willie, by personnel from the NRCS Dilkon Field Office, by personnel from The Gap Sub-office, and by personnel from the LLPMC. The windstrip will be hand watered as needed in 2006, and possibly for part of 2007. The windstrip will have to survive on natural precipitation from then on and this will provide good data on the ability of giant sacaton to be used for windstrips in this area without supplemental moisture.

Willie Farm, The Gap, Arizona

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Partnering with the New Mexico Department of Transportation to Improve Dry-Land Seeding Technology

In 2005, a cooperative agreement was developed between the New Mexico Department of Transportation (NMDOT) and the Natural Resources Conservation Service's Los Lunas Plant Materials Center (LLPMC). The new agreement begins a three-year project between the two agencies to evaluate the revegetation technology currently being used by the NMDOT. The NMDOT has had difficulty meeting the national vegetation requirements following the completion of road construction projects. The proposed work in the new 2005 agreement will study the current revegetation technology and determine its effectiveness.

In 1992 (as a result of a similar agreement), the LLPMC produced a Handbook of Roadside Vegetation Management that contained the necessary information to successfully revegetate areas that were disturbed by roadside construction. Species selection for seed mixes in this handbook was based upon species identified in the Natural Resources Conservation Service range site descriptions for a particular location. The NMDOT would like a more simplified procedure based on only three standard seed mixes for Region 6 (west-central New Mexico): one for desert regions, one for the foothill pinion-juniper region, and one for all of Region 6 that consists of a cool-season, xeric mixture than can be successfully seeded in the fall.

In 2006, two highway construction sites were identified for the seeding trials: one south of Gallup, NM on Highway 602 and one just north of San Ysidro, NM on Highway 550. Both sites are areas where the vegetation was removed as the result of a construction project.

The Gallup site has received all seeding treatments and will be monitored for germination and growth. The

Highway 500 site was not ready until late 2006, and it will receive all treatments in 2007.

The new agreement allows the LLPMC an opportunity to investigate new mulching treatments and new plant materials that have been made available since 1992 and were not evaluated in the first NMDOT revegetation study by the LLPMC. The outcome of this agreement will provide useful information about revegetation technology for both the NMDOT and the LLPMC.

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National Park Service Assistance

In 2006, the LLPMC had agreements with Carlsbad Caverns National Park, Capulin Volcano National Monument, Grand Canyon National Park, Wupatki National Monument, Hubbell Trading Post National Historic Site, Pipe Spring National Monument, and Zion National Park of the Department of the Interior's National Park Service (NPS). These agreements allow the LLPMC to assist the NPS to revegetate disturbed areas in the parks, such as roadsides, trails, campgrounds, and other construction areas. The LLPMC provides the NPS with plant materials of the parks' local native ecotypes by producing both seed and containerized transplants for revegetation purposes.

During 2006, the LLPMC had 15 native grass species in production on a total of 11.74 acres, and was able to produce 473 pounds of grass seed to be used for NPS revegetation efforts. In 2006, the LLPMC provided 120 containerized transplants of four native shrub and tree species to the NPS.

Blue grama production field for Grand Canyon National Park

Mountain muhly production field for Capulin National Monument

Blue grama production field for Carlsbad Cavern National Park

Galleta production field for Wupatki National Park

Galleta production field for Pipe Spring National Monument

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Autumn Amber and Giant Sacaton Find Market Niche

David Salman, president of Santa Fe Greenhouses, Inc. and *High Country Gardens* catalog, had heard about the Los Lunas Plant Materials Center (LLPMC) from a well-known Santa Fe landscape designer but may not have expected what he saw when he visited in 2003. “I was very impressed with the Plant Materials Center,” said Salman. “I had received an invitation to the LLPMC Field Day that year, but couldn't make. I did go a few weeks later.” Salman immediately spotted two cultivars that stood out as ones he could use for ornamental horticulture applications. He has worked to incorporate them into his business since then.

Autumn Amber threeleaf sumac was noticed by Salman as an excellent alternative to spreading juniper. While not an evergreen it has an amazing abundance of chartreuse colored flowers in mid-spring and attractive glossy green foliage that turns an amber-yellow in the fall. Autumn Amber and Salman's operations are a good fit, because Salman is always looking for native plants that are drought tolerant. This is also a good fit with the LLPMC because they are working to develop plants that conserve water and respond to New Mexico's challenging climate.

The second plant that caught Salman's eye was the Giant sacaton grass. Giant sacaton was originally developed by the Los Lunas Plant Material Center for non-woody windbreaks in area vegetable fields. Breeding by the LLPMC has made a dramatic difference–resulting in a large grass that surpasses Pampas grass in stature and is much bigger and showier than its unimproved native forms.

“We need to use more natives in our landscaping, and Giant sacaton is native,” said Salman. “It can serve as a specimen plant, or used in a row to create a living fence or windbreak.” While the LLPMC is striving to meet many conservation needs, pioneers like Salman are finding that some of the products do an outstanding job in the backyard as well as in the field. Private individuals like Salman deserve our gratitude for aiding conservation of our resources and environment through the development, use, and sale of such cultivars.

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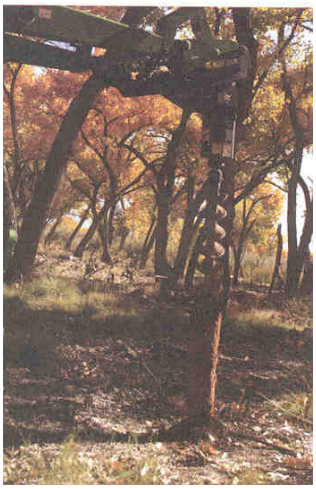
Deep Planting Methodology

Unusual Method Works in Riparian Environment

The Los Lunas Plant Materials Center (LLPMC) is experiencing success with a new deep planting methodology for planting native shrub transplants on a 33-acre riparian site on the Rio Grande in Bosque, New Mexico south of Belen. They are using shrubs grown in the one-gallon, 14-inch deep treepots. What is unusual is these shrubs are being planted into 6-foot holes where the plants root crowns are buried. Typically, this practice would kill most transplants.

“Riparian shrub species have evolved over thousands of years in association to flooding and seem to be tolerant to being buried in sediments, or in this case, being planted deep in the soil,” said Greg Fenchel, PMC manager. “The roots of the transplants are placed to the depth of the capillary fringe of the water table. Because the root system is in moist soil, it will not be necessary to irrigate these plants unless the capillary fringe of the water table drops below the root zone.”



Auger used for deep planting

The Bosque, New Mexico location being used in the study had an adequate stands of cottonwoods and herbaceous understory, but only a few native understory shrubs. Subsequently, only native understory shrubs were planted here.

These transplant shrubs were grown to have shoot systems (biomass above the root crown) that can be up to seven feet tall even though their root systems are

generally 12 inches in length due to the restriction imposed by the pot. Typically one would conclude that the shoot system is not in balance with the root system.

"With this new deep planting methodology that is exactly what you need for success," says Fenchel. "We bury these plants four to five feet deep and try to have at least the top three feet of the shoot above the soil surface so they are not shaded by other low growing plants."

Prior to the PMC planting this site, it was cleared of exotic phreatophytes using the cut stump method with 'Garlon 4' and vegetable oil and was done with only minimal surface disturbance. This method involves felling the trees by hand with chain saws, painting the stumps with herbicide, and then cutting the mainstem and branches for firewood, and finally chipping the 6 inch diameter or less into surface mulch. Continued monitoring and spot treating sprouts of the exotic species with herbicide is necessary for control. With only limited surface disturbance, very few weeds emerged which provided for favorable planting conditions. Dense stands of weeds can be more competitive than the desired plants for water, light and nutrients.

The PMC planted 1,000 transplants using the deep planting methodology in 2004, and they recently planted 800 more in 2005. The plants are watered once after planting to provide for good root to soil contact. Those planted in 2004 were not irrigated during the 2005 growing season, and as of November 2005, show a 95% survival rate.

For additional information about deep planting, call the LLPMC at 865-4684.

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Tips for Fall Planting of Native Shrubs

The prime planting season for containerized shrubs is October through November for regions in the desert and pinyon-juniper woodlands of New Mexico. This generally is the best time to plant in these areas because the cooler fall air temperatures and lack of wind reduce water use by the plants and allows minimal irrigation to establish the transplant. Additionally, fall soil temperatures are still warm enough to permit substantial root growth that can extend into subsurface moist soil. This root system growth will provide the plant a better chance of surviving the typical hot dry winds and low precipitation the following spring.

There are only a few species of shrubs that may be cost effective to establish by seeding. The two most common species are fourwing saltbush and winterfat. Most other native shrubs have a very slim chance of establishing from seed, and the seed is typically very expensive.

For improved transplanting success, select species and ecotypes that are adapted to your area. The best way to assure this is to use local ecotypes, plants which were originally collected from the area to be planted. If local ecotypes are not available, try to purchase plants from the Southwest that match the elevation and latitude of your planting site. Ecotype selection can be as critical as species selection.

Any time plants are in leaf, care must be taken in transporting the containerized stock. Transport in a pickup bed can work if the plants are laid down in the bed, are well watered before transport, and if the outside of the pots do not reach temperatures lethal to roots (120° F) from sun exposure. Wind blast should also be minimized (use net coverings or minimize transport time). It is difficult to haul large quantities of plants if they are laid down in a pickup bed because it is difficult to stack the containers to prevent the containers from crushing the stems and leaves of adjacent plants. Covered transport, such as inside a van or an enclosed trailer, is preferable because the plants are protected from sun and wind damage and can remain upright allowing more plants to be transported.

Once you have the transplants at your staging area, keep the soil medium moist by watering as often as necessary (typically daily). It is often easier to store the plants in a shady area to reduce watering needs before planting. The plastic containers are typically black so they need to be protected from direct sunshine because the container walls can get hot enough to kill roots growing along the inside surface of the pot.

Water is generally the limiting factor reducing plant survival in field plantings in the droughty Southwest. Sometimes, transplants with large root systems are easier to establish. When field planting deeply-rooted transplants, embed an irrigation tube with the transplant before backfilling. This will allow for deep watering and encourage continued taproot development. By irrigating subsurface soils and not the ground surface, weed growth is much less likely to compete with the transplant.

For more information, review the brochure *Guidelines for Planning Riparian Restoration in the Southwest* located at www.nm.nrcs.usda.gov/plants.html, and the *Field Office Technical Guide*, Standards and Specifications, Tree and Shrub Establishment located at www.nm.nrcs.usda.gov/technical/fotg/section-4/std-specs.html

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Riparian Restoration Demonstrations Continue to Spark Interest of NRCS Cooperators in the State

Riparian restoration interest continues to grow among NRCS cooperators in New Mexico. As of March 1, more than 20 USDA Service Centers have requested either plants or information from the Los Lunas Plant Materials Center (LLPMC). Since 1987, the LLPMC has offered 100 free riparian plants annually to any NRCS field office in New Mexico for demonstration plantings. In addition this year, the LLPMC had available over 2000 plants of about ten species of montane plants.

In Aztec, Allan Maez, the district conservationist at the Aztec Service Center, received 100 plant material units which included narrowleaf cottonwood, silver leaf buffaloberry, wax currant, crack willow and aspen. These plants will be installed on the banks of the San Juan River at Farmington's new Nature Center. The environmental group, River Reach, will do the planting. Both salt cedar and Russian olive have been removed from the site and will be replaced with these natives.

In Espanola, Thomas Gonzales, the district conservationist of the Espanola Service Center received 20 cottonwoods and 10 skunkbush sumac. The 20 cottonwoods were provided to a land owner on the Rio Grande of the Rinconada community. This individual will plant these natives where he has previously removed Russian olive and salt cedar from his property. He has had previous success with the 20 cottonwood poles he established on his property the year before. The 20 skunkbush sumac were received by another cooperator with property on the Rio Chama. The plants were installed to stabilize the tow of a diversion dam. Also, this individual planted 50 cottonwood pole cuttings using the methodology outlined in the NRCS brochure “The Pole Cutting Solution” which can be obtained on the NRCS state web page.

In Carrizozo, Dick Shaw and Hollis Fuchs of the Carrizozo Area Office received 80 plant material units of various species including littleleaf mock orange, quaking aspen, silver buffalo berry, desert willow and cinquefoil.

“Water is a huge issue locally with regular acute shortages and bans on outside watering,” said Hollis Fuchs. “Customers, landscapers and nurseries are constantly looking for non-invasive natives of beauty that are water wise.”

Shaw and Fuchs have strategically distributed these plants for plantings where they will receive high visibility. Planting locations include: Carrizozo schools, Carrizozo Village Hall, and the new USDA Service Center. The LLPMC Staff believes that his plant material distribution is a very important part of their program in that it is one more facet that keeps their program active with NRCS field offices. Additionally, it initiates volunteer applied conservation practices that may not have happened if the plant materials were not available.

Demonstration in Carrizozo of plant materials from the NRCS Plant Materials Center in Los Lunas.

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Distribution of Plant Materials in 2006

Nineteen USDA-NRCS New Mexico Field Offices, six RC&D and the New Mexico State Office received plant materials as well as a number of federal, tribal, and municipal agencies. In addition, plant materials were distributed to commercial producers of native seed and plants. Many of the plant materials distributed by the LLPMC have been used to revegetate cleared riparian areas. The following table lists the plant materials that were distributed by the LLPMC in 2006.

2006 Plant and Seed Distribution

Distributed to	Poles	Cuttings and whips	Large Containers 1-gallon >	Small Containers < 1-gal	PLS Seed (pounds)
NRCS 19 Field Offices and 6 RC&D's and SO	789	150	1,757	955	6.8
PMC's (6)	—	—	—	40	48.6
Seed Producers (7)	—	—	—	—	1,415
Nurseries (2)	—	—	27	500	—
National Park Service (2)	—	—	102	—	88
Bureau of Reclamation	—	—	105	150	0.8
National Forests (2)	—	—	60	30	—
US Geological Survey (2)	—	—	354	50	1.5
Agricultural Research Service	—	—	10	—	11
Bureau of Land Management (4)	465	100	165	—	—
Soil and Water Conservations Districts (5)	11	—	1,129	2,010	3
Native American Tribes (4)	40	20	1,299	1,009	5
New Mexico State Agencies (2)	30	—	129	—	19
City of Albuquerque	575	—	230	80	—
Non-Profit Organizations (3)	795	—	633	4	35.5
Total	**2,705**	**270**	**6,000**	**4,828**	**1,634**